
Embryonic stem cell-derived endothelial cells for treatment of hindlimb ischemia.

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Authors: Ngan F Huang, Hiroshi Niiyama, Abhijit De, Sanjiv S Gambhir, John P Cooke

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Public Summary:

Peripheral arterial disease (PAD) results from narrowing of the peripheral arteries that supply oxygenated blood and nutrients to the legs and feet. This pathology causes symptoms such as intermittent claudication (pain with walking), painful ischemic ulcerations, or even limb-threatening gangrene. It is generally believed that the vascular endothelium, a monolayer of endothelial cells that invests the luminal surface of all blood and lymphatic vessels, plays a dominant role in vascular homeostasis and vascular regeneration. As a result, stem cell-based regeneration of the endothelium may be a promising approach for treating PAD. In this video, we demonstrate the transplantation of embryonic stem cell (ESC)-derived endothelial cells for treatment of unilateral hindlimb ischemia as a model of PAD, followed by non-invasive tracking of cell homing and survival by bioluminescence imaging. The specific materials and procedures for cell delivery and imaging will be described. This protocol follows another publication in describing the induction of hindlimb ischemia by Niiyama et al.

Scientific Abstract:

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